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THE FORMATION OF CONNEXIN, USE AND METHOD OF COSMETIC TREATMENT

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VERIFICATION OF A TRANSLATION

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My name and post office address are as stated above:

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International Application PCT/FR00/00818
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I hereby declare that all statements made herein of my own knowledge are true
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Compound for Cosmetic use that Includes Grains of a Gelled
Substance

[Composition a usage cosmetique comportant des grains d'une
substance gellee]

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Compound for Cosmetic use that Includes Grains of a Gelled
Substance

Abstract

This compound is formed of carrageenan gel dispersed in a liquid medium. The carrageenan gel incorporates additives such as marine micro-algae, enzymes, bacteria or substances produced by bacteria, coloring agents and so forth.

The present invention pertains to a compound for cosmetic use comprised of grains of a gelled substance arranged in a liquid medium.

A compound for cosmetic use that contains grains of gelled alginates is known from the French patent 2,645,439.

Nevertheless, the use of alginate to produce gelled grains does not allow the incorporation in these grains of certain additives such as the salts of polyvalent metals that precipitate the alginate solutions.

The invention has in particular the goal of overcoming this disadvantage and of recommending a cosmetic compound of the type specified earlier and in which the grains are formed of a substance that is clearly different for the alginates and which allows the incorporation of a large variety of additives.

¹ Numbers in the margin indicate pagination in the foreign text.

To achieve this purpose the compound according to the invention is characterized in that the gelled substance is based on carrageenan.

The compatibility of the solutions of salts of carrageenan with, in particular, the salts of polyvalent metals such as calcium, strontium, aluminum, zinc and iron, and their improved resistance in highly ionized solutions yields a great deal more freedom in the choice of additives to be incorporated.

The carrageenans are known products, comprised of polysaccharide chains extracted from red or rhodophyceae algae, more particularly the algae known under the names of Gigartinales, Chondrus, Iridaea, Eucheuma, and Hypnea.

The constituent monomers of a carrageenan are D galactose and 3,6 and hydro galactose bound at X- (1 => 3) and at B-(1 => 4).

According to the relative proportions of two monomers and the degree of sulfatation, one can distinguish several families of the aforementioned polymers: iota, kappa, lambda, mu and nu, polymers that are available commercially especially by Sanofi Bio Industrie under the trade names Satiagum, Satiagel or Aubigum.

The carrageenan gel grains in conformity with the invention are preferably obtained in the following manner: /2

1. One prepares an aqueous solution whose concentration in carrageenan is between 1 and 5% by weight. The aqueous phase is

either distilled water or neutralized, and in this case one will prefer a kappa carrageenan which will be dissolved hot at a temperature greater than 65°C, or a saline solution such as sea water, and in this case a lambda carrageenan will be used preferably, the dissolution in this case can be obtained cold by means of vigorous stirring.

2. Following dissolution of the carrageenan one will add some additives used for visualization of the grains and/or to obtain the desired cosmetic activity. In the case of cosmetic additives that are not very stable thermally the solutions of lambda carrageenans will be used preferably for the capacity to be made soluble at low temperature.

3. One will produce drops of this solution that one wants to introduce into a coagulating solution that can be sea water or even the solution of a potassium salt preferably with the addition of a salt of a polyvalent metal such as calcium, zinc, iron, aluminum or even another liquid chosen among those that will be recommended subsequently in this text.

The strength of the gel obtained with the carrageenans will depend on several factors: the nature and concentration of the polymer, the metallic cation associated with the sulfate group, the concentration and the composition in mineral salts of the coagulating solution in which the gel is formed.

The kappa carrageenans will allow one, after dissolution in the hot state, to form some long lasting gels. The lambda carrageenans that are soluble when cold form gels only in much higher concentrations.

The grains can be obtained from a solution of kappa carrageenan of a mixture of kappa, lambda or iota carrageenan.

Preferably one will use as additives a mineral pigment and/or a water-soluble coloring agent and/or a marine plant or extract of such a plant and/or an enzyme and/or a bacteria or a substance produced by a bacteria and/or an animal or plant organic extract and/or the salt of a polyvalent metal. /3

Thus, the incorporation of synthetic or natural coloring agents and/or extracts of plant or animal origin that are colored will improve the perception by the consumer of the presence of additives in the final product.

The incorporation of microscopic organisms that are unicellular or not, intact or crushed in the carrageenan gel allows stabilization of the cells or ground matter.

Thus, the grains of carrageenan gel that can contain the active ingredients that are quite diverse will produce in addition to the cosmetic compound a pleasant and attractive visual appearance for transparent products as well such as gels, lotions or oils as for opaque products such as creams, milks and tint bases.

As the mineral pigment one preferably will use at least one of the following materials: talc, mica, natural mother of pearl, synthetic mother of pearl (micatitanium, bismuth oxychloride), iron oxide, chromium oxide, titanium oxide, aluminum hydroxide, zinc oxide, alumina, barium sulfate, silicon, diatom earth.

Preferably one will use a concentrate of a culture of wet or dry micro-algae such as chlorella, tetraselmis, skeletonema, scenedesmus, isochrysis, dunaliella, asterionella, thalassionema, hemiselms thalassiothrix, chaeteceros, porphyridium, euglena, planktoniella, chromulina, coccolithus, ceratum, dinophysis, gyrodium, sticococcus is used as the marine plant.

As bacteria preferably one will use a concentrate of a culture of cyanobacteria such as spirulin. /4

One can also use a substance produced by bacteria, DHA, for example (di-hydroxy acetone), which is produced by bacterial fermentation.

As the enzymes one can preferably use one of the following enzymes: anti-elastase, anti-collagenase or a bacterial for algal extract with anti-elastase or anti-collagenase activity.

As the organic extracts one preferably will use at least one of the following substances: albumin, collagen, mucopolyssaccharides, gelatin of land or marine origin, and serum.

Preferably the volume of gel greens of carrageenan represents from 5 to 80% of the total volume of the compound according to the invention.

Preferably the liquid medium in which the grains of carrageenan gel are dispersed is a solution of marine salt such as mother liquor formed by solutions of mineral salts obtained in salt marshes after recovering crystallized sodium chloride.

Alternatively the liquid medium can be demineralized water or even a mixture of water and polyol.

The present invention also pertains to a process for the preparation of a compound with cosmetic use according to the invention, a process characterized in that one adds to it some drops of some hot aqueous solution carrageenan whose carrageenan concentration is between 1 and 5% by weight, in a cold coagulating solution that can be demineralized water or even an organic solvent such as polyisobutene (4-7) that has been hydrogenated, and isoparaffin (characterized by a boiling point between 170° and 240°C), a silicon oil and, especially, octamethyl cyclotetrasiloxane and/or decamethyl cyclopentasiloxane, ethanol, or even a water/propanediol mixture or a water/glycerol mixture.

The temperature of the solution of kappa carrageenan is preferably between 60° and 90°C and that of the coagulating solution is preferably less than 25°C.

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If the drops are formed outside the coagulating solution one will obtain some grains with approximately spherical shape. If these drops are formed in the coagulating solution itself one will obtain grains in filament shape.

The grains of carrageenan gel once formed can be preserved in the coagulating solution that comprises in this case the liquid medium of the final product. Alternatively these grains are rinsed and placed in suspension in demineralized water or in seawater that has been appropriately protected from bacterial and fungal aggression, or even in a mixture of water and a polyol such as a propanediol, a butanediol, glycerol, sorbitol or pentaerythritol.

The solution of carrageenan from which one makes the drops intended to be inserted in the coagulated solution can be one of the following solutions:

EXAMPLE I

Kappa carrageenan	3.00%
Methyl paraben	0.20%
Demineralized water	95.80%
Concentrate of a chlorella culture with 400.10 cells/g	1.00%

EXAMPLE II

Lambda carrageenan (Satiagum X3)	3.00%
Methyl paraben	0.20%
Demineralized water	94.80%
Scenedesmus in powder	2.00%

EXAMPLE III

Lambda carrageenan (Satiagum X3)	3.00%
Methyl paraben	0.20%
Spirulina in powder form	0.50%
Demineralized water	96.30%

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EXAMPLE IV

Lambda carrageenan (Satiagum X3)	2.00%
Methyl paraben	0.20%
Dunaliella in powder form	2.00%
Sea Water	95.80%

EXAMPLE V

Kappa carrageenan (Satiagiel)	2.50%
Methyl paraben	0.20%
Centrate of tetraselmis culture (40.10 cells/g)	5.00%
Demineralized water	91.80%

EXAMPLE VI

Lambda carrageenan (Satiagum X3)	3.50%
Methyl paraben	0.20%
Miniaturized Maaerl (white algae)	1.00%
Demineralized water	95.50%

EXAMPLE VII

Kappa carrageenan (Satiagel)	2.50%
Methyl paraben	0.20%
Micron-size fucus with bacteria removed	4.00%
Demineralized water	93.30%

EXAMPLE VIII

Lambda carrageenan (Satiagum X3)	3.00%
Methyl paraben	0.20%
Marine gelatin (cod, 45%)	10.00%
Sea water	86.80%

EXAMPLE IX

Lambda carrageenan (Satiagum X3)	2.50%
Methyl paraben	0.20%
Sterile lyophilized bovine serum albumin	1.00%
Demineralized water	96.30%

EXAMPLE X

Lambda carrageenan (Satiagiel)	3.50%
Methyl paraben	0.20%
Marine Collagen (shark = 1.5%)	2.00%
Sea water	94.30%
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EXAMPLE XI

Lambda carrageenan (Satiagum X3)	1.50%
Methyl paraben	0.20%
Mica-titanium and chromium oxide (Timeron green)	3.00%
Marine Mucopolysaccharides	0.20%
Sea water	95.10%

EXAMPLE XII

Lambda carrageenan (Satiagum X3)	1.50%
Methyl paraben	0.20%
Ultra marine blue	0.40%
Marine mucopolysaccharides	0.20%
Sea water	90.90%
Potassium hydroxide	qs pH 8.5

Below we present examples of a coagulating solution that can be used for the fabrication of carrageenan gel grains having the composition according to the invention.

EXAMPLE I

Potassium iodide	15.00%
Magnesium chloride 800 g/l (mother liquid "chlorumag 100")	60.00%
Demineralized water	25.00%

EXAMPLE II

Potassium chloride	3.00%
Demineralized water	97.00%

EXAMPLE III

Potassium chloride	35.00%
Calcium chloride	0.50%
Demineralized water	64.50%

EXAMPLE IV

Potassium chloride	20.00%
Magnesium chloride 450 g/l (Mother liquor "chlorumag 50")	80.00%

The designations "chlorumag 110" and "chlorumag 50" are commercial names used by the company Salins du Midi. /8

Next will give three examples of compounds with cosmetic use according to the invention, which use carrageenan gel grains.

EXAMPLE I

Non-foaming marine bath

Grains of carrageenan obtained with a solution of carrageenan according to example IV above and a coagulating solution according to example I above	30.00%
Magnesium chloride 800 g/l (available commercially by the company Salins du Midi under the trade name "chlorumag 110")	69.00%
Extract of fucus (Alginol AK/P Sanofi)	1.00%

EXAMPLE II

Tonic Lotion

Grains of carrageenan obtained with a solution of carrageenan according to example V above and a coagulating solution according to example III above	10.00%
Polyacrylic acid	0.10^
Potassium hydroxide	0.04%
Nicotinamide	0.10%
Potassium pidolate	0.50%
Octylodecanol "POE 30"	1.00%
Perfume	0.15%
Methyl paraben	0.26%
Propyl paraben	0.04%
Penoxyethanol	0.20%

EXAMPLE III

Hydrating cream

Grains of carrageenan obtained with the solution of carrageenan and according to example XII above and a coagulating solution according to example IV above

	5.00%
Demineralized water	32.13%
Stearic acid "POE 50"	3.00%
Stearic acid "POE 100"	0.50%
Glycerin	2.00%
Urea	0.40%
Serine	0.10%
Potassium pidolate	0.50%
Butyleneglycol	4.00%
Methyl paraben	<u>/10</u> 0.35%
Butyl paraben	0.05%
Propyl paraben	0.10%
Ocymenol	0.07%
Ethyldiglycol	1.00%
Decamethylcyclopentasiloxane	6.00%
Vaseline oil	12.00%
Ethylhexyle laurate	9.00%
Trilamine	5.00%
Pentaerythritol Monostearate	5.00%
Glycerol monostearate	3.50%
Stearic acid	0.80%
Soy Sterol	1.00%
Soy lecithin	0.10%
Glycolic extract of corallina	3.00%
Phytoplankton extract	5.00%
Perfume	0.40%

All the examples given above are presented only as illustrations and are in no way limiting.

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CLAIMS

1. Cosmetic use compound of the type that includes grains that include a gelled substance arranged in a liquid medium, characterized in that the said gelled substance is a carrageenan gel.

2. Compound according to claim 1 characterized in that the gelled substance includes a gel of kappa carrageenan or a mixture of gels of kappa, lambda and iota carrageenan.

3. Compound according to one of the preceding claims characterized in that the said gel of carrageenan contains an additive element that includes a mineral pigment and/or a water soluble coloring agent and/or a marine plant or an extract of this plant and/or a bacteria or a substance produced by a bacteria and/or an enzyme and/or a plant or animal organic extract and/or a salt of the polyvalent metal.

4. Compound according to claim 3 characterized in that the mineral pigment is chosen from among the following components: talc, mica, natural mother of pearl, synthetic mother of pearl (micatitanium, bismuth oxychloride), iron oxide, chromium oxide, titanium oxide, aluminum hydroxide, zinc oxide, alumina, barium sulfate, silicon, diatomite.

5. Compound according to one of the claims 3 and 4 characterized in that the marine plant component includes at least one of the following components: chlorella, tetraselmis, skeletonema, scenedesmus, isochrysis, dunaliella, asterionella, thalassionema, hemiselmis thalassiothrix, chaeteceros, porphyridium, euglena, planktoniella, chromulina, coccolithus, ceratum, dinophysis, gyrodium, sticococcus.

6. Compound according to one of the claims 3 to 5 characterized in that the enzyme is chosen from among the following components: anti-elastase, anti-collagenase or bacterial or algal extract with anti-elastase or anti-collagenase activity.

7. Compound according to one of the claims 3 to 6 characterized in that the plant or animal organic extract includes one of the following components: albumin, collagen, mucopolysaccharides, gelatin of land or marine origin, and serum.

8. Compound according to one of the preceding claims characterized in that the volume of the grains of carrageenan gel represent 5 to 80% of the total volume of the compound.

9. Compound according to one of the preceding claims characterized in that the liquid medium is a solution of marine mineral salts or of demineralized water or a mixture of water and a polyol.

10. Process for preparation of a cosmetic compound according to one of the preceding claims, characterized in that one prepares some grains of carrageenan gel by introducing some drops of an aqueous hot solution of kappa carrageenan into a cold coagulating solution that can be: demineralized water, or even an organic solvent such as: polyisobutene, an isoparaffin, a silicon oil, ethanol, or even a water/propanediol mixture or a water/glycerol mixture.